

PROCESS FOR FABRICATING COPPER DAMASCENE INTERCONNECT

Abstract

A dielectric layer overlying a substrate is prepared. A damascene opening is etched into the dielectric layer. The damascene opening is filled with copper or copper alloy. A surface of the copper or copper alloy is treated with hydrogen-containing plasma such as H_2 or NH_3 plasma. The treated surface of the copper or copper alloy then reacts with trimethylsilane or tertramethylsilane under plasma enhanced chemical vapor deposition (PECVD) conditions. Subsequently, by PECVD, a silicon carbide layer is in-situ deposited on the copper or copper alloy.